

REMARKS

The claims have been amended to overcome the formal rejection thereof and objection thereto. These changes are discussed below. Three new dependent claims (6-8) have been added reciting Markush groups of the vinyl-substituted aromatic compound and the solvent; the former is supported in the specification at page 5, line 9, and the latter is supported in the specification at page 5, lines 18-20. The claims before the Examiner are Claims 1-8.

Claims 1-5 were rejected under the second paragraph of 35 U.S.C. § 112 as indefinite due to the presence of the term "high", which the Examiner regarded as indefinite. The term has been stricken from the claims.

Claims 4 and 5 were objected to under 37 C.F.R. § 1.75(c) as allegedly failing further to limit the subject matter of a previous claim. The Examiner asserted that the softening point values in Claims 4 and 5 were outside the range in Claim 1 and that appropriate correction should be made. The Examiner is reminded that Claims 4 and 5 are directed to a hydrogenated copolymer resulting from the hydrogenation of the copolymer of Claim 1. (Claim 3 is now in independent form.) The specification contains a discussion of the softening points for both the hydrogenated and non-hydrogenated copolymers; see, for example, page 4, line 3; page 5, lines 4-5, and page 7, lines 16-17 for the softening point of the copolymer of Claim 1 and page 4, lines 15, 16, and 18-19, and page 9, line 3 for the softening point values for the hydrogenated copolymers of Claims 4 and 5. The Examiner should also compare Examples 1-4 directed to the non-hydrogenated copolymer with Examples 5-8 which are directed to the hydrogenated copolymer. It is therefore respectfully submitted that the claims are proper and no further change is necessary. Should the Examiner, after considering this explanation, still believe that further revisions are necessary, he is asked to contact the undersigned.

The rejection of Claims 1 and 3-5 under 35 U.S.C. § 103 as unpatentable over Nishimura et al. '388, if applied to the claims as amended, is respectfully traversed. The claims have been amended to state that the heat-polymerization occurs while divisionally adding a monomer mixture of cyclopentadiene and/or dicyclopentadiene and the vinyl-substituted aromatic compound to the solvent; see page 6, lines 10-14 of the specification. The claims also specify that the quantity of solvent used in the copolymer production is at least 0.2 and less than 0.45 times based on the mass of the whole monomers. This range is supported by the disclosure in the specification at page 6, lines 4-6.

The present invention is directed to a copolymer that can, upon hydrogenation, form an adhesion-providing resin with a high melting point for a hot melt adhesive. Applicant has found that by controlling the amount of solvent relative to the monomer mixture and divisionally adding the monomers during the heat polymerization operation, there results a copolymer that is particularly effective for ultimate use, upon hydrogenation, as a hot melt adhesive.

Nishimura et al. '388 describes a copolymer that can be hydrogenated wherein the copolymer is made by a process in which 50-500 parts by weight of solvent is used per 100 parts by weight of the monomer mixture; see the reference at column 2, lines 35-38 and column 5, lines 26-35 and Claims 1 and 2. It is stated expressly at column 5, lines 32-35, "When the amount of the solvent used is less than the above-mentioned range, it is impossible to produce the desired copolymer or hydrogenated product thereof having the sharp molecular weight distribution." Thus, the reference expressly teaches away from using a solvent range recited in the instant claims. The Examiner is referred to the two comparative examples in which the solvent was added in an amount within the Nishimura et al. '388 range and outside the claimed range. See particularly the softening point values.

The copolymers are not the same. Moreover, there is no discussion in the reference of divisional addition of the monomers and the claims patentably distinguish thereover.

The rejection of Claims 1-3 under 35 U.S.C. § 102 as anticipated by Daughenbaugh et al. '239 is also respectfully traversed.

The reference at column 3, lines 32-35 shows no awareness of carrying out the reaction using a controlled amount of solvent nor do the working examples in Tables 2 and 3 show an awareness, discussion, or recognition of a need to do a divisional addition of monomers during the heat polymerization. The use of a solvent in Daughenbaugh et al. '239 is clearly optional as seen from the statement at column 5, lines 64-66 reading "The monomer blend and solvent when used, was charged to the autoclave and the apparatus was purged with nitrogen before sealing." (Emphasis added.) The rejection should be withdrawn.

The rejection of Claims 1 and 2 under 35 U.S.C. § 102 as anticipated by GB '989 is also respectfully traversed. While the reference describes the formation of a copolymer based upon cyclopentadiene with methylcyclopentadiene or Diels-Alder oligomer(s) thereof with an unsaturated aromatic hydrocarbon in the presence of a solvent, GB '989, as Daughenbaugh et al. '239 does not teach, recognize, or suggest the use of divisional addition of the monomer mixture to the solvent and controlling the quantity of solvent during thermal polymerization. Accordingly, the polymers are different and the rejection should be withdrawn.

The Examiner is thanked for acknowledging receipt of a certified copy of the priority document from the International Bureau and for listing references submitted with an Information Disclosure Statement.

In view of the foregoing revisions and remarks it is respectfully submitted that Claims 1-8 are in condition for allowance and a USPTO paper to those ends is earnestly solicited. The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

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